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(54) COVER PANEL FOR A CABIN OF A VEHICLE AND PROVIDED WITH A WEAKENING FOR THE OPENING OF AN UNDERLYING AIRBAG

ABDECKPLATTE FÜR EINE FAHRZEUGKABINE UND AUSGESTATTET MIT EINER SCHWÄCHUNG FÜR DAS ÖFFNEN EINES DARUNTERLIEGENDEN AIRBAGS

PANNEAU DE COUVERTURE DESTINÉ À UNE CABINE D'UN VÉHICULE ET POURVU D'UN AFFAIBLISSEMENT POUR L'OUVERTURE D'UN AIRBAG SOUS-JACENT

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DescriptionTECHNICAL FIELD

[0001] The present invention relates to a cover panel for a cabin of a vehicle and provided with a weakening for the opening of an underlying airbag.

PRIOR ART

[0002] A cabin of a vehicle is internally covered with cover panels having externally a visible surface having a fine finish.

[0003] Arranged underneath at least one cover panel is a corresponding airbag that is normally housed (when it has not been inflated, i.e. when it has not been activated yet) in its own housing. At the airbag, the cover panel has a weakening that delimits a lid that "pops" (i.e. opens) when the airbag inflates so as to allow the deployment of said airbag.

[0004] The weakening normally consists of a not-through incision (so that it is not visible from the cabin) which delimits the periphery of the lid and, in a plan view, generally has a "Y" (i.e. a "chalice") shape or an "H" shape.

[0005] Some examples of weakenings for cover panels are disclosed in the patent applications DE19636428A1, EP0771695A1, DE102015111590, WO2015154898A1, DE102006059212A1, WO2006111212A1, and EP1213193A1.

[0006] The patent application US2011211927A1 describes a method for manufacturing a cover panel for a cabin of a vehicle and provided with a weakening for the opening of an underlying airbag; in particular, a weakening line is made by milling a series of holes along said weakening line.

[0007] Patent US6113131A discloses an instrument panel in which a foamed layer and a skin are laminated in this sequence on the surface of a resin-made core member which is disposed in front of a main unit of an air bag apparatus, and a tearable portion for inflating an air bag is formed by irradiation of a laser beam from the back face of the resin-made core member; the tearable portion elongates from the core member to a part of a back face side of the skin.

DESCRIPTION OF THE INVENTION

[0008] The object of the present invention is to provide a cover panel for a cabin of a vehicle and provided with a weakening for the opening of an underlying airbag, the cover panel allowing an optimal opening of the underlying airbag and, simultaneously, not showing externally any trace of the weakening.

[0009] According to the present invention, a cover panel for a cabin of a vehicle and provided with a weakening for the opening of an underlying airbag is provided, as claimed in the appended claims.

[0010] The claims describe preferred embodiments of the present invention constituting an integral part of the present description.

5 BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The present invention will now be described with reference to the accompanying drawings, which illustrate a non-limiting embodiment example thereof, wherein:

- Figure 1 is a schematic partial view of a cabin of an automobile comprising a cover panel provided with a weakening for the opening of an underlying airbag;
- 15 • Figure 2 is a partial plan view of the cover panel of Figure 1 illustrating the weakening;
- Figures 3-6 are enlarged scale views of respective details of Figure 2;
- Figure 7 is a transverse sectional view of the cover panel of Figure 1 at the weakening;
- 20 • Figure 8 is a partial plan view of the cover panel of Figure 1 illustrating a different embodiment of the weakening;
- Figure 9 is a plan view of the cover panel of Figure 8 illustrating the position of a deployment channel of the underlying airbag;
- 25 • Figure 10 is a partial plan view of the cover panel of Figure 1 illustrating a further embodiment of the weakening; and
- 30 • Figure 11 is a plan view of the cover panel of Figure 10 illustrating the position of a deployment channel of the underlying airbag.

PREFERRED EMBODIMENTS OF THE INVENTION

[0012] In Figure 1, reference numeral 1 indicates, as a whole, an automobile provided with a cabin 2.

[0013] Some parts of the cabin 2 (in particular all parts of the dashboard 3) are covered by corresponding cover panels 4 having externally a visible surface having a fine finish. For example, the cover panels 4 can be externally covered by a foam (cheapest solution), by fabrics (intermediate solution), or by leather (most expensive solution).

[0014] Arranged underneath at least one cover panel 4 is a corresponding airbag 5 that is normally housed (when it has not been inflated, i.e. when it has not been activated yet) in its own housing. At the airbag 5, the cover panel 4 has a weakening 6 (illustrated in Figure 2) that delimits a lid that "pops" (i.e. opens) when the airbag inflates so as to allow the deployment of said airbag.

[0015] As illustrated in the accompanying figures, the weakening 6 consists of a sequence of not-through incisions 7 and 8 (better illustrated in Figure 7) which are separated from each other, are arranged along a weakening line 9, are obtained from an internal surface 10 of the cover panel 4, and terminate at a non-zero distance (illustrated in Figure 7) from an external surface 11 of the

cover panel 4. When the incisions 7 and 8 are made by means of a laser (for example using femtosecond technology), they generally have a (slightly) conical shape, which is a direct consequence of the way in which a laser beam "excavates" the material that makes up the cover panel 4.

[0016] As better illustrated in Figure 7, all the incisions 7 and 8 have the exact same depth (measured perpendicularly to the cover panel 4); i.e. the incisions 7 and 8 do not differ from one another by depth. However, according to a different embodiment not illustrated, the incisions 7 and 8 could have different depths; i.e. the incisions could differ from one another by depth.

[0017] Moreover, in some sections of the weakening line 9 there are incisions 7 each having a width W1 (measured parallel to the cover panel 4) while in other sections of the weakening line 9 there are incisions 8 each having a width W2 (measured parallel to the cover panel 4) greater than the width W1; i.e. the incisions 7 and 8 differ from one another by a different width W1 and W2.

[0018] According to a preferred, but non-limiting, embodiment, the width W2 is between 1.4 and 1.6 times the width W1; in particular, the width W1 is between 0.15 and 0.25 times an overall thickness B of the cover panel 4 while the width W2 is between 0.2 and 0.4 times the overall thickness B of the cover panel 4.

[0019] The incisions 7 have a pitch C1 and the incisions 8 have a pitch C2 greater than the pitch C1; i.e. the incisions 7 and 8 differ from one another by a different pitch C1 and C2. According to a preferred, but non-limiting, embodiment, the pitch C2 is between 1.3 and 1.4 times the pitch C1; in particular, the pitch C2 is between 0.6 and 0.7 times the overall thickness B of the cover panel 4 while the pitch C1 is between 0.45 and 0.55 times the overall thickness B of the cover panel 4.

[0020] As illustrated in Figure 2, the weakening line 9 has an "H" shape having two side portions 12 parallel to and opposite one another and an intermediate portion 13 that centrally connects the two side portions 12 to one another; consequently, the weakening line 9 has two connection areas, in each of which the intermediate portion 13 connects to a corresponding side portion 12. The incisions 8 are provided only in a central area (illustrated with a greater thickness in Figure 2) of the intermediate portion 13, and in the two connection areas (illustrated with a greater thickness in Figure 2) between the intermediate portion 13 and the side portions 12. In particular, in each connection area the incisions 8 are present both in the intermediate portion 13 and in the side portion 12 so that, in each connection area, the incisions 8 constitute a "T" shape (illustrated with a greater thickness in Figure 2).

[0021] According to a preferred, but non-limiting, embodiment, in the intermediate portion 13 the weakening line 9 has a straight shape in correspondence with the incisions 8 and has a curved wave shape (in particular a sinusoid) in correspondence of the incisions 7. Moreover, each side portion 12 has both straight and curved wave-

shaped sections (in particular a sinusoid). In each side portion 12 there are only two small straight-shaped sections arranged at the two ends, while each side portion 12 has a curved wave shape, in particular a sinusoid, also at the connection area with the intermediate portion 13.

[0022] According to a preferred, but non-limiting, embodiment, at each incision 7 or 8 the cover panel 4 has a residual thickness A between 0.15 and 0.2 times the overall thickness B of the cover panel 4.

[0023] The embodiment illustrated in Figure 8 differs from the embodiment illustrated in Figure 2 by the absence of the curved wave shape in the weakening line 9 having an "H" shape; i.e., in the embodiment illustrated in Figure 8, the weakening line 9 (having an "H" shape) is completely rectilinear everywhere (thus without curved wave-shaped sections).

[0024] As illustrated in Figure 9, the two side portions 12 of the weakening line 9 configured as an "H" are arranged further outwards with respect to the edge of a deployment channel 14 of the airbag 5; in particular, the two side portions 12 of the weakening line 9 configured as an "H" are arranged at a distance D (greater than 2 mm and preferably equal to 3 mm) from the edge of the deployment channel 14 of the airbag 5. This way, it is possible to ensure a deployment of the airbag 5 with no obstacles in spite of (by compensating) all position tolerances of the cover panel 4 with respect to the airbag 5. Obviously, the same "tolerance" (i.e. a distance D greater than 2 mm between the side portions 12 of the weakening line 9 from the edge of the deployment channel 14 of the airbag 5) is preferably also provided in the embodiment illustrated in Figure 2 wherein the weakening line 9 has rectilinear sections with curved wave-shaped sections arranged between them.

[0025] The embodiment illustrated in Figure 10 differs from the embodiment illustrated in Figures 2 and 8 by the different configuration of the weakening line 9: in the embodiment illustrated in Figures 2 and 8, the weakening line 9 has an "H" shape constituted by two side portions 12 connected to one another by an intermediate portion 13, while in the embodiment illustrated in Figure 10 the weakening line 9 has a "Y" shape (i.e. a "chalice" shape) constituted by a base portion 15, by an intermediate portion 16, and by two diverging portions 17 which originate at the intermediate portion 16 and diverge with respect to one another, thus forming a 90° angle between one another; consequently, the weakening line 9 has two connection areas in which the intermediate portion 16 connects to the base portion 15 and in which the intermediate portion 16 connects to the diverging portions 17. In particular, the intermediate portion 16 is perpendicular to the base portion 15, connects to the base portion 15 at a midpoint of the base portion 15 and forms a 45° angle with each diverging portion 17. According to a different embodiment not illustrated, the angle between the two diverging portions 17 could be different from 90° (and, consequently, the angle formed between the intermedi-

ate portion 16 and each diverging portion 17 could be different from 45°). According to a different embodiment not illustrated, the weakening line 9 configured as a "Y" does not have the base portion 15, i.e. is constituted by the intermediate portion 16 and by the two diverging portions 17 only; in this embodiment, there is only one connection area between the intermediate portion 16 and the two diverging portions 17.

[0026] As illustrated in Figure 10, the incisions 8 are only provided in the two connection areas (illustrated with a greater thickness in Figure 10) between the intermediate portion 16 and the base portion 15 on one side and the intermediate portion 16 and the diverging portions 17 on the other side. In particular, in each connection area the incisions 8 are provided both in the intermediate portion 16 and in the portions 15 and 17 so that in each connection area the incisions 8 constitute a "T" shape or a "Y" shape (illustrated with a greater thickness in Figure 10).

[0027] In the embodiment illustrated in Figures 10 and 11, the weakening line 9 configured as a "Y" only has rectilinear sections; according to a different embodiment not illustrated, the weakening line 9 configured as a "Y" could have some rectilinear sections and some curved wave-shaped sections (as illustrated in Figure 2), i.e. could have rectilinear sections with curved wave-shaped sections arranged between them (as in the embodiment illustrated in Figure 2).

[0028] As illustrated in Figure 11, the base portion 15 and the vertexes of the diverging portions 17 of the weakening line 9 configured as a "Y" are arranged further outwards with respect to the edge of the deployment channel 14 of the airbag 5; in particular, the base portion 15 and the vertexes of the diverging portions 17 of the weakening line 9 configured as a "Y" are arranged at a distance D (greater than 2 mm and preferably equal to 3 mm) from the edge of the deployment channel 14 of the airbag 5. This way, it is possible to ensure a deployment of the airbag 5 with no obstacles in spite of (by compensating) all tolerances relating to the positioning of the cover panel 4 with respect to the airbag 5.

[0029] Summarizing the foregoing, in some sections of the weakening line 9 there are only "*standard*" incisions 7 each having the width W1, while in other sections of the weakening line 9 there are only "*augmented*" incisions 8 each having the width W2 greater than the width W1; in particular, in each connection area, the corresponding portions 12-17 of the weakening line 9 consist of the "*augmented*" incisions 8 only while, next to each connection area, the corresponding portions 12-17 of the weakening line 9 consist of the "*standard*" incisions 7 only. In both configurations of the weakening line 9 (i.e. both in the weakening line 9 configured as an "H" and in the weakening line 9 configured as a "Y"), the "*augmented*" incisions are only present in each connection area and in a central area of the weakening line 9; in this regard, it is important to note that, in the weakening line 9 configured as a "Y", the central area of the weakening

line 9 coincides with the connection area between the base portion 15 and the diverging portions 17.

[0030] The cover panel 4 having the weakening 6 can be made of any type of material such as, for example, a hard polyurethane foam.

[0031] The embodiments described herein can be combined with one another without departing from the scope of protection of the present invention as defined by the following claims.

[0032] The cover panel 4 described in the foregoing has numerous advantages.

[0033] First of all, the cover panel 4 described in the foregoing allows an optimal opening of the underlying airbag 5 and, simultaneously, does not show any trace of the weakening 6 (i.e. the weakening 6 is completely invisible for anyone inside the cabin 2 regardless of their point of view or the current illumination).

[0034] Moreover, the weakening 6, while allowing an optimal opening of the underlying airbag 5, ensures that the violent opening of the airbag 5 does not cause the detachment of parts of the cover panel 4 which could be thrust with violence against the occupants of the automobile 1.

[0035] Finally, the cover panel 4 described in the foregoing is easy and inexpensive to manufacture as the weakening 6 can be made quickly by means of a laser cutting instrument (for example using the femtosecond technology) that is readily available on the market.

LIST OF REFERENCE NUMERALS OF THE FIGURES

[0036]

1	automobile
2	cabin
3	dashboard
4	cover panel
5	airbag
6	weakening
7	incisions
8	incisions
9	weakening line
10	internal surface
11	external surface
12	side portions
13	intermediate portion
14	deployment channel
15	base portion
16	intermediate portion
17	diverging portions
A	thickness
B	thickness
C	pitch
W1	width
W2	width
D	distance

Claims

1. A cover panel (4) for a cabin (2) of a vehicle (1) and provided with a weakening (6) for the opening of an underlying airbag (5); the weakening (6) consists of a sequence of not-through incisions (7, 8) which are separated from each other, are arranged along a weakening line (9), are obtained from an internal surface (10) of the cover panel (4), and terminate at a non-zero distance from an external surface (11) of the cover panel (4);
- wherein in some sections of the weakening line (9) there are only first incisions (7) each having a first width (W1) while in other sections of the weakening line (9) there are only second incisions (8) each having a second width (W2) greater than the first width (W1); wherein the weakening line (9) comprises a plurality of portions (12-17) that connect to one another in at least one connection area; and wherein next to each connection area, the corresponding portions (12-17) of the weakening line (9) consist only of a sequence of the first incisions (7), which are separated from each other;
- the cover panel (4) is **characterized in that**, in each connection area, the corresponding portions (12-17) of the weakening line (9) consist only of a sequence of the second incisions (8), which are separated from each other.
2. The cover panel (4) according to claim 1, wherein:
- the weakening line (9) has an "H" shape comprising two side portions (12) parallel to each other and opposite one from the other and an intermediate portion (13) connecting centrally the two side portions (12); and there are two connection areas in each of which the intermediate portion (13) connects to a corresponding side portion (12).
3. The cover panel (4) according to claim 2, wherein a central area of the intermediate portion (13) also consists of the second incisions (8) only while, next to the central area, the intermediate portion (13) consists of the first incisions (7) only.
4. The cover panel (4) according to claim 3, wherein the second incisions (8) are only present in the central area of the intermediate portion (13) and in the two connection areas between the intermediate portion (13) and the side portions (12).
5. The cover panel (4) according to claim 2, 3 or 4, wherein the two side portions (12) of the weakening line (9) configured as an "H" are arranged at a distance (D) greater than 2 mm and preferably equal to 3 mm from an edge of a deployment channel (14) of the airbag (5).
6. The cover panel (4) according to any one of claims 2 to 5, wherein in the intermediate portion (13) the weakening line (9) has a straight shape in correspondence with the second incisions (8) and has a curved wave shape, in particular sinusoidal shape, in correspondence of the first incisions (7).
7. The cover panel (4) according to any one of claims 2 to 6, wherein each side portion (12) has both straight and curved wave-shaped sections, in particular sinusoidal shape.
8. The cover panel (4) according to any one of claims 2 to 7, wherein each side portion (12) has a curved wave shape, in particular sinusoidal shape, at the connection area with the intermediate portion (13).
9. The cover panel (4) according to claim 1, wherein:
- the weakening line (9) has a "Y" shape comprising an intermediate portion (16) and two diverging portions (17) that originate at the intermediate portion (16) and diverge with respect to one another; and there is at least one connection area in which the intermediate portion (16) connects to the two diverging portions (17).
10. The cover panel (4) according to claim 9, wherein:
- the weakening line (9) also comprises a base portion (15); the intermediate portion (16) is perpendicular to the base portion (15) and connects to the base portion (15) at a midpoint of the base portion (15); and there are two connection areas in which the intermediate portion (16) connects to the two diverging portions (17) and in which the intermediate portion (16) connects to the base portion (15).
11. The cover panel (4) according to claim 9 or 10, wherein the second incisions (8) are only provided in each connection area.
12. The cover panel (4) according to claim 9, 10 or 11, wherein the base portion (15) and the vertexes of the diverging portions (17) of the weakening line (9) configured as a "Y" are arranged at a distance (D) greater than 2 mm and preferably equal to 3 mm from an edge of a deployment channel (14) of the airbag (5).

13. The cover panel (4) according to any one of claims 1 to 12, wherein the second incisions (8) are only provided in each connection area and in a central area of the weakening line (9).
14. The cover panel (4) according to any one of claims 1 to 13, wherein the weakening line (9) has rectilinear sections with curved wave-shaped, in particular sinusoidal, sections arranged between them.
15. The cover panel (4) according to any one of claims 1 to 14, wherein:
- the second width (W2) is between 1.4 and 1.6 times the first width (W1);
- the first width (W1) is between 0.15 and 0.25 times an overall thickness (B) of the cover panel (4); and
- the second width (W2) is between 0.2 and 0.4 times the overall thickness (B) of the cover panel (4).
16. The cover panel (4) according to any one of claims 1 to 15, wherein the first incisions (7) have a first pitch (C1) and the second incisions (8) have a second pitch (C2) greater than the first pitch (C1), preferably between 1.3 and 1.4 times the first pitch (C1).
17. The cover panel (4) according to any of claims 1 to 16, wherein the first incisions (7) and the second incisions (9) all have the same depth.

Patentansprüche

1. Abdeckplatte (4) für einen Fahrgastraum (2) eines Fahrzeugs (1), die mit einer Schwächung (6) für das Öffnen eines darunter liegenden Airbags (5) versehen ist, wobei die Schwächung (6) aus einer Folge von nicht durchgehenden Einschnitten (7, 8) besteht, die voneinander getrennt sind, entlang einer Schwächungslinie (9) angeordnet sind, von einer Innenfläche (10) der Abdeckplatte (4) erhalten werden und in einem von Null verschiedenen Abstand von einer Außenfläche (11) der Abdeckplatte (4) enden,
- wobei in einigen Abschnitten der Schwächungslinie (9) nur erste Einschnitte (7) vorhanden sind, die jeweils eine erste Breite (W1) aufweisen, während in anderen Abschnitten der Schwächungslinie (9) nur zweite Einschnitte (8) vorhanden sind, die jeweils eine zweite Breite (W2) aufweisen, die größer ist als die erste Breite (W1),
- wobei die Schwächungslinie (9) eine Vielzahl von Abschnitten (12 - 17) aufweist, die in mindestens einem Verbindungsbereich miteinander verbunden sind, und

wobei benachbart zu jedem Verbindungsbereich die entsprechenden Abschnitte (12 - 17) der Schwächungslinie (9) nur aus einer Folge der ersten Einschnitte (7) bestehen, die voneinander getrennt sind,

wobei die Abdeckplatte (4) **dadurch gekennzeichnet ist, dass** in jedem Verbindungsbereich die entsprechenden Abschnitte (12 - 17) der Schwächungslinie (9) nur aus einer Folge der zweiten Einschnitte (8) bestehen, die voneinander getrennt sind.

2. Abdeckplatte (4) nach Anspruch 1, wobei:

die Schwächungslinie (9) eine "H"-Form hat, die zwei Seitenabschnitte (12), die parallel zueinander und einander gegenüberliegend angeordnet sind, und einen Zwischenabschnitt (13) aufweist, der die beiden Seitenabschnitte (12) mittig verbindet, und zwei Verbindungsbereiche vorhanden sind, an denen der Zwischenabschnitt (13) jeweils mit einem entsprechenden Seitenabschnitt (12) verbunden ist.

3. Abdeckplatte (4) nach Anspruch 2, wobei ein Mittenbereich des Zwischenabschnitts (13) auch nur aus den zweiten Einschnitten (8) besteht, während der Zwischenabschnitt (13) benachbart zum Mittenbereich nur aus den ersten Einschnitten (7) besteht.

4. Abdeckplatte (4) nach Anspruch 3, wobei die zweiten Einschnitte (8) nur im Mittenbereich des Zwischenabschnitts (13) und in den beiden Verbindungsbereichen zwischen dem Zwischenabschnitt (13) und den Seitenabschnitten (12) vorhanden sind.

5. Abdeckplatte (4) nach Anspruch 2, 3 oder 4, wobei die beiden Seitenabschnitte (12) der als ein "H" konfigurierten Schwächungslinie (9) in einem Abstand (D) von mehr als 2 mm und vorzugsweise in einem Abstand von 3 mm von einem Rand eines Entfaltungskanals (14) des Airbags (5) angeordnet sind.

6. Abdeckplatte (4) nach einem der Ansprüche 2 bis 5, wobei im Zwischenabschnitt (13) die Schwächungslinie (9) eine gerade Form in Übereinstimmung mit den zweiten Einschnitten (8) und eine gekrümmte Wellenform, insbesondere eine Sinusform, in Übereinstimmung mit den ersten Einschnitten (7) aufweist.

7. Abdeckplatte (4) nach einem der Ansprüche 2 bis 6, wobei jeder Seitenabschnitt (12) sowohl gerade als auch gekrümmte wellenförmige, insbesondere sinusförmige, Abschnitte aufweist.

8. Abdeckplatte (4) nach einem der Ansprüche 2 bis 7, wobei jeder Seitenabschnitt (12) am Verbindungsbereich mit dem Zwischenabschnitt (13) eine gekrümmte Wellenform, insbesondere eine Sinusform, aufweist.

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9. Abdeckplatte (4) nach Anspruch 1, wobei:

die Schwächungslinie (9) eine "Y"-Form aufweist, die einen Zwischenabschnitt (16) und zwei divergierende Abschnitte (17) aufweist, die vom Zwischenabschnitt (16) ausgehen und voneinander divergent verlaufen, und mindestens ein Verbindungsbereich vorhanden ist, an dem der Zwischenabschnitt (16) mit den beiden divergierenden Abschnitten (17) verbunden ist.

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10. Abdeckplatte (4) nach Anspruch 9, wobei:

die Schwächungslinie (9) auch einen Basisabschnitt (15) aufweist;
der Zwischenabschnitt (16) sich senkrecht zum Basisabschnitt (15) erstreckt und mit dem Basisabschnitt (15) an einem Mittelpunkt des Basisabschnitts (15) verbunden ist, und es zwei Verbindungsbereiche gibt, in denen der Zwischenabschnitt (16) mit den beiden divergierenden Abschnitten (17) verbunden ist und in denen der Zwischenabschnitt (16) mit dem Basisabschnitt (15) verbunden ist.

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11. Abdeckplatte (4) nach Anspruch 9 oder 10, wobei die zweiten Einschnitte (8) nur in jedem Verbindungsbereich vorgesehen sind.

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12. Abdeckplatte (4) nach Anspruch 9, 10 oder 11, wobei der Basisabschnitt (15) und die Scheitelpunkte der divergierenden Abschnitte (17) der Schwächungslinie (9), die als ein "Y" ausgebildet sind, in einem Abstand (D) von mehr als 2 mm und vorzugsweise in einem Abstand von 3 mm von einem Rand eines Entfaltungskanals (14) des Airbags (5) angeordnet sind.

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13. Abdeckplatte (4) nach einem der Ansprüche 1 bis 12, wobei die zweiten Einschnitte (8) nur in jedem Verbindungsbereich und in einem Mittenbereich der Schwächungslinie (9) vorgesehen sind.

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14. Abdeckplatte (4) nach einem der Ansprüche 1 bis 13, wobei die Schwächungslinie (9) gerade Abschnitte mit dazwischen angeordneten gekrümmten wellenförmigen, insbesondere sinusförmigen, Abschnitten aufweist.

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15. Abdeckplatte (4) nach einem der Ansprüche 1 bis 14, wobei:

die zweite Breite (W2) dem 1,4- bis 1,6-fachen der ersten Breite (W1) gleicht,
die erste Breite (W1) dem 0,15- bis 0,25-fachen einer Gesamtdicke (B) der Abdeckplatte (4) gleicht, und
die zweite Breite (W2) dem 0,2- bis 0,4-fachen der Gesamtdicke (B) der Abdeckplatte (4) gleicht.

16. Abdeckplatte (4) nach einem der Ansprüche 1 bis 15, wobei die ersten Einschnitte (7) einen ersten Abstand (C1) aufweisen und die zweiten Einschnitte (8) einen zweiten Abstand (C2) aufweisen, der größer ist als der erste Abstand (C1), vorzugsweise dem 1,3- und 1,4-fachen des ersten Abstands (C1) gleicht.

17. Abdeckplatte (4) nach einem der Ansprüche 1 bis 16, wobei die ersten Einschnitte (7) und die zweiten Einschnitte (9) alle die gleiche Tiefe aufweisen.

Revendications

1. Panneau de revêtement (4) pour une cabine (2) d'un véhicule (1) et doté d'un affaiblissement (6) pour l'ouverture d'un coussin gonflable (5) sous-jacent ; l'affaiblissement (6) consiste en une séquence d'incisions non débouchantes (7, 8) qui sont séparées les unes des autres, sont agencées le long d'une ligne d'affaiblissement (9), sont obtenues à partir d'une surface interne (10) du panneau de revêtement (4) et se terminent à une distance non nulle d'une surface externe (11) du panneau de revêtement (4) ;

dans lequel dans certaines sections de la ligne d'affaiblissement (9) il n'y a que des premières incisions (7) présentant chacune une première largeur (W1) tandis que dans d'autres sections de la ligne d'affaiblissement (9) il n'y a que des deuxièmes incisions (8) présentant chacune une deuxième largeur (W2) supérieure à la première largeur (W1) ;

dans lequel la ligne d'affaiblissement (9) comprend une pluralité de parties (12-17) correspondantes qui sont reliées les unes aux autres dans au moins une zone de liaison ; et

dans lequel à côté de chaque zone de liaison, les parties (12-17) correspondantes de la ligne d'affaiblissement (9) consistent seulement en une séquence des premières incisions (7), qui sont séparées les unes des autres ;

le panneau de revêtement (4) est **caractérisé en ce que**, dans chaque zone de liaison, les parties (12-17) correspondantes de la ligne d'affaiblissement (9) consistent seulement en une séquence des deuxièmes incisions (8), qui sont

séparées les unes des autres.

2. Panneau de revêtement (4) selon la revendication 1, dans lequel :

la ligne d'affaiblissement (9) présente une forme de « H » comprenant deux parties latérales (12) parallèles l'une à l'autre et opposées l'une à l'autre et une partie intermédiaire (13) reliant les deux parties latérales (12) de manière centrale ; et
il y a deux zones de liaison dans chacune desquelles la partie intermédiaire (13) est reliée à une partie latérale (12) correspondante.

3. Panneau de revêtement (4) selon la revendication 2, dans lequel une zone centrale de la partie intermédiaire (13) consiste également en les deuxièmes incisions (8) uniquement lorsque, à côté de la zone centrale, la partie intermédiaire (13) consiste en les premières incisions (7) uniquement.

4. Panneau de revêtement (4) selon la revendication 3, dans lequel les deuxièmes incisions (8) sont uniquement présentes dans la zone centrale de la partie intermédiaire (13) et dans les deux zones de liaison entre la partie intermédiaire (13) et les parties latérales (12).

5. Panneau de revêtement (4) selon la revendication 2, 3 ou 4, dans lequel les deux parties latérales (12) de la ligne d'affaiblissement (9) configurée en un « H » sont agencées à une distance (D) de plus de 2 mm et de préférence égale à 3 mm d'un bord d'un canal de déploiement (14) du coussin gonflable (5).

6. Panneau de revêtement (4) selon l'une quelconque des revendications 2 à 5, dans lequel dans la partie intermédiaire (13) la ligne d'affaiblissement (9) présente une forme droite en correspondance avec les deuxièmes incisions (8) et présente une forme d'onde incurvée, en particulier de forme sinusoïdale, en correspondance des premières incisions (7).

7. Panneau de revêtement (4) selon l'une quelconque des revendications 2 à 6, dans lequel chaque partie latérale (12) a à la fois des sections droites et en forme d'onde incurvée, en particulier de forme sinusoïdale.

8. Panneau de revêtement (4) selon l'une quelconque des revendications 2 à 7, dans lequel chaque partie latérale (12) présente une forme d'onde incurvée, en particulier une forme sinusoïdale, au niveau de la zone de liaison avec la partie intermédiaire (13).

9. Panneau de revêtement (4) selon la revendication 1, dans lequel :

la ligne d'affaiblissement (9) présente une forme de « Y » comprenant une partie intermédiaire (16) et deux parties divergentes (17) qui partent au niveau de la partie intermédiaire (16) et divergent l'une par rapport à l'autre ; et
il y a au moins une zone de liaison dans laquelle la partie intermédiaire (16) est reliée aux deux parties divergentes (17).

10. Panneau de revêtement (4) selon la revendication 9, dans lequel :

la ligne d'affaiblissement (9) comprend également une partie base (15) ;
la partie intermédiaire (16) est perpendiculaire à la partie base (15) et est reliée à la partie base (15) au niveau d'un point médian de la partie base (15) ; et
il y a deux zones de liaison dans lesquelles la partie intermédiaire (16) est reliée aux deux parties divergentes (17) et dans lesquelles la partie intermédiaire (16) est reliée à la partie (15).

11. Panneau de revêtement (4) selon la revendication 9 ou 10, dans lequel les deuxièmes incisions (8) sont uniquement disposées dans chaque zone de liaison.

12. Panneau de revêtement (4) selon la revendication 9, 10 ou 11, dans lequel la partie base (15) et les sommets des parties divergentes (17) de la ligne d'affaiblissement (9) configurée en « Y » sont agencées à une distance (D) de plus de 2 mm et de préférence égale à 3 mm d'un bord d'un canal de déploiement (14) du coussin gonflable (5).

13. Panneau de revêtement (4) selon l'une quelconque des revendications 1 à 12, dans lequel les deuxièmes incisions (8) sont seulement disposées dans chaque zone de liaison et dans une zone centrale de la ligne d'affaiblissement (9).

14. Panneau de revêtement (4) selon l'une quelconque des revendications 1 à 13, dans lequel la ligne d'affaiblissement (9) a des sections rectilignes avec des sections en forme d'onde incurvée, en particulier sinusoïdales, agencées entre elles.

15. Panneau de revêtement (4) selon l'une quelconque des revendications 1 à 14, dans lequel :

la deuxième largeur (W2) fait entre 1,4 et 1,6 fois la première largeur (W1) ;
la première largeur (W1) fait entre 0,15 et 0,25 fois une épaisseur globale (B) du panneau de revêtement (4) ; et
la deuxième largeur (W2) fait entre 0,2 et 0,4 fois l'épaisseur globale (B) du panneau de revêtement (4).

16. Panneau de revêtement (4) selon l'une quelconque des revendications 1 à 15, dans lequel les premières incisions (7) présentent un premier pas (C1) et les deuxièmes incisions (8) présentent un deuxième pas (C2) supérieur au premier pas (C1), de préférence entre 1,3 et 1,4 fois le premier pas (C1). 5
17. Panneau de revêtement (4) selon l'une quelconque des revendications 1 à 16, dans lequel les premières incisions (7) et les deuxièmes incisions (9) présentent toutes la même profondeur. 10

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Fig. 1

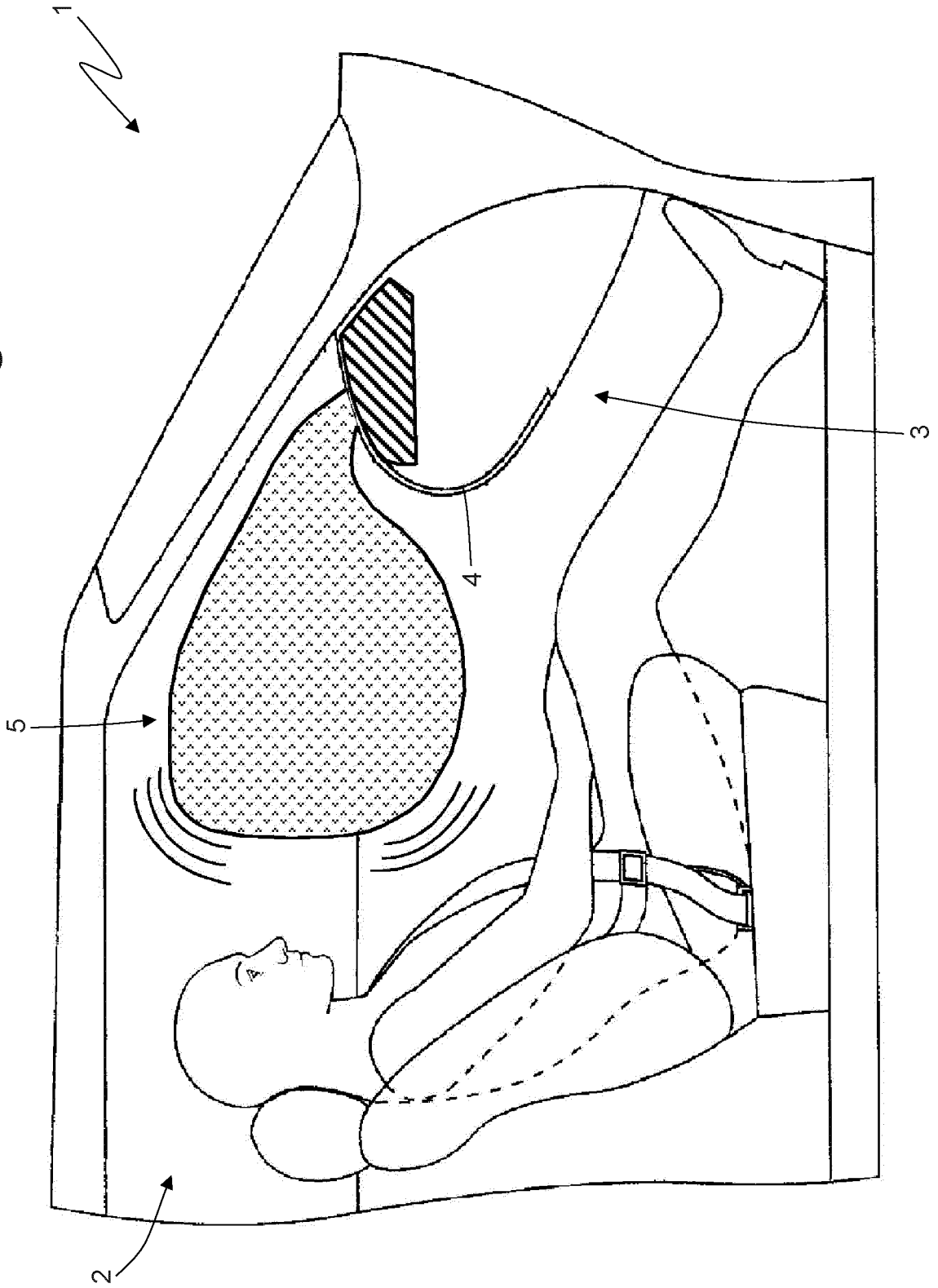


Fig. 2

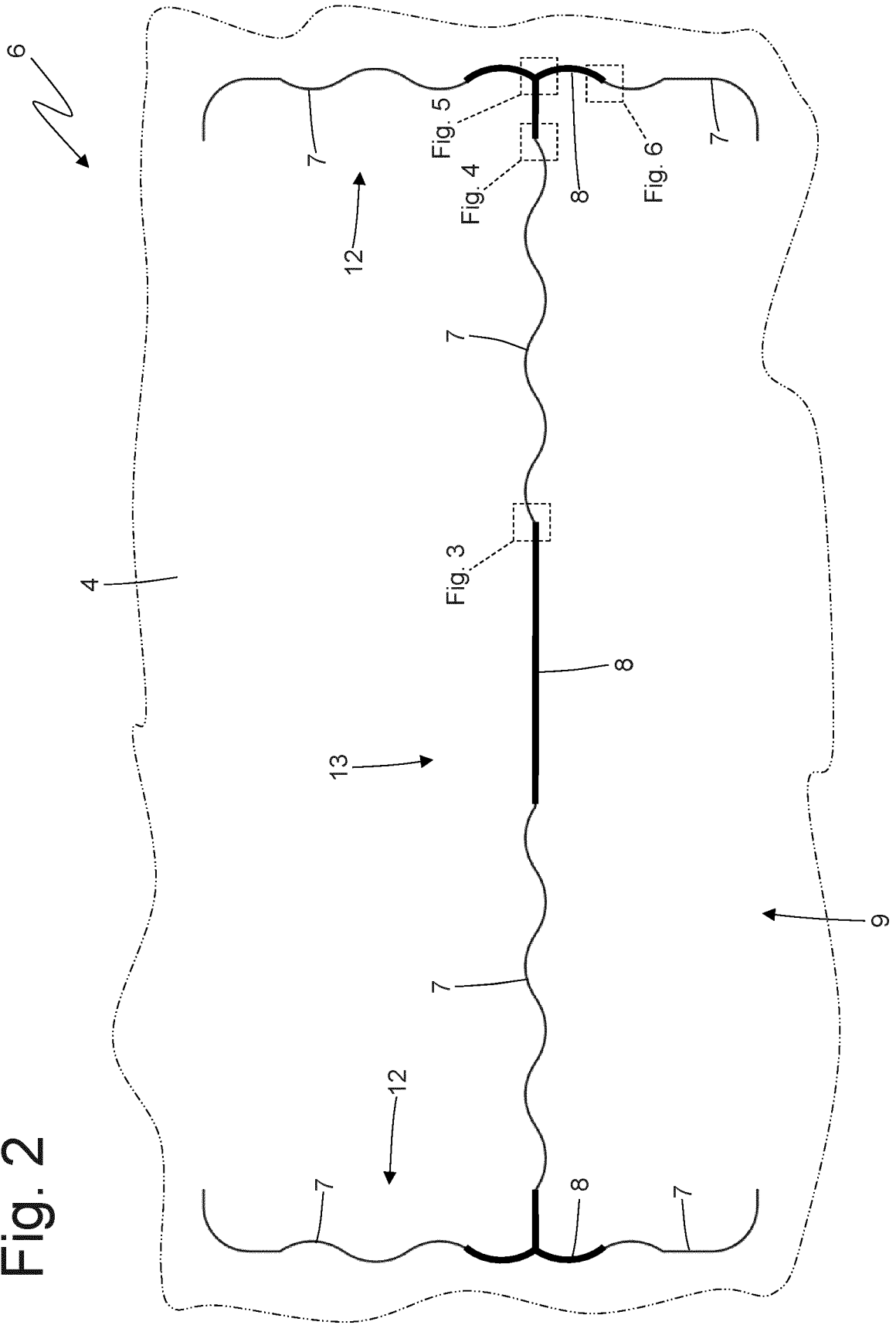


Fig. 4

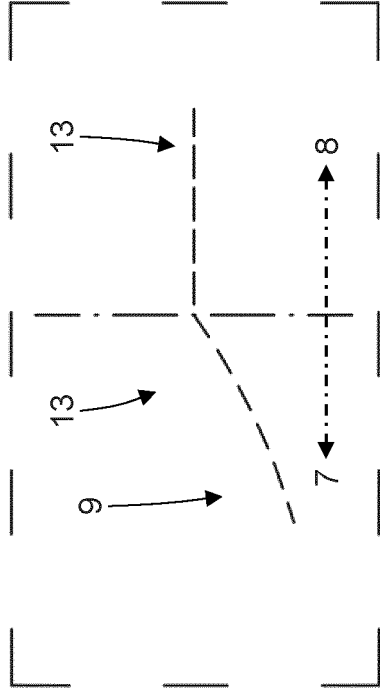


Fig. 3

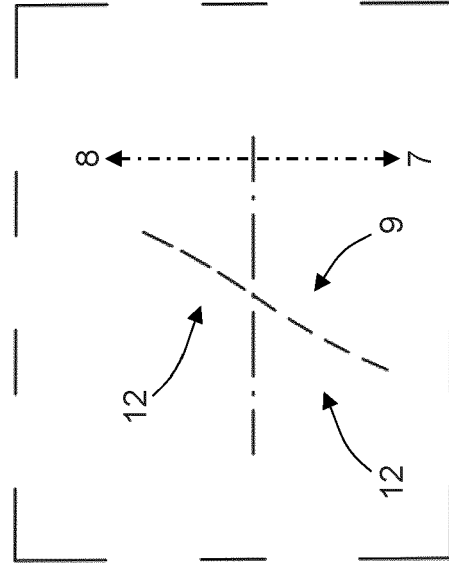
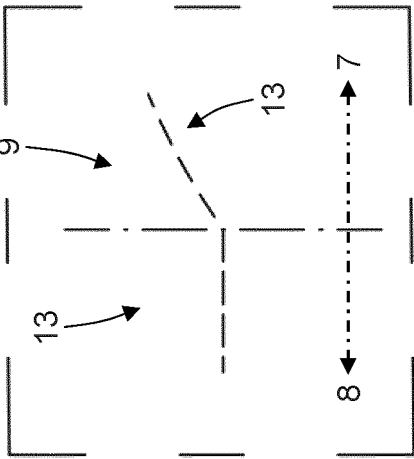


Fig. 6

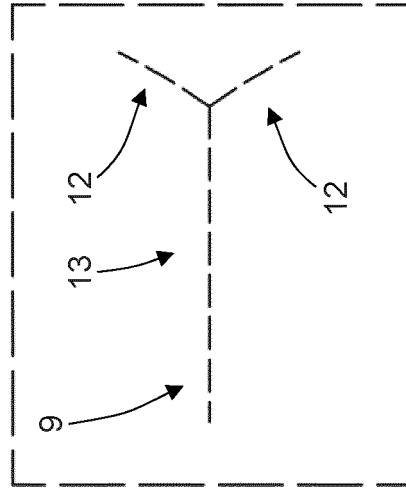


Fig. 5

Fig. 8

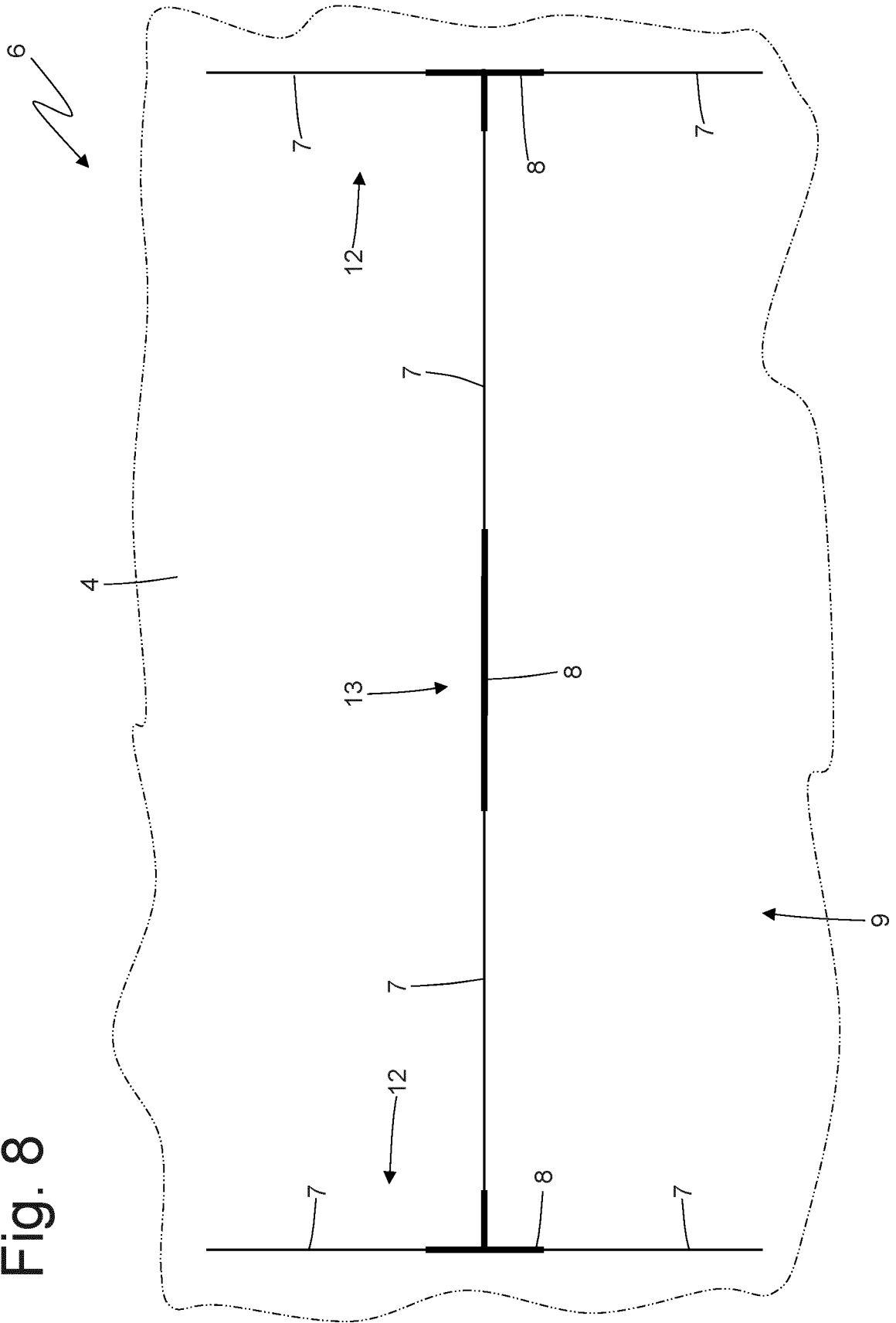
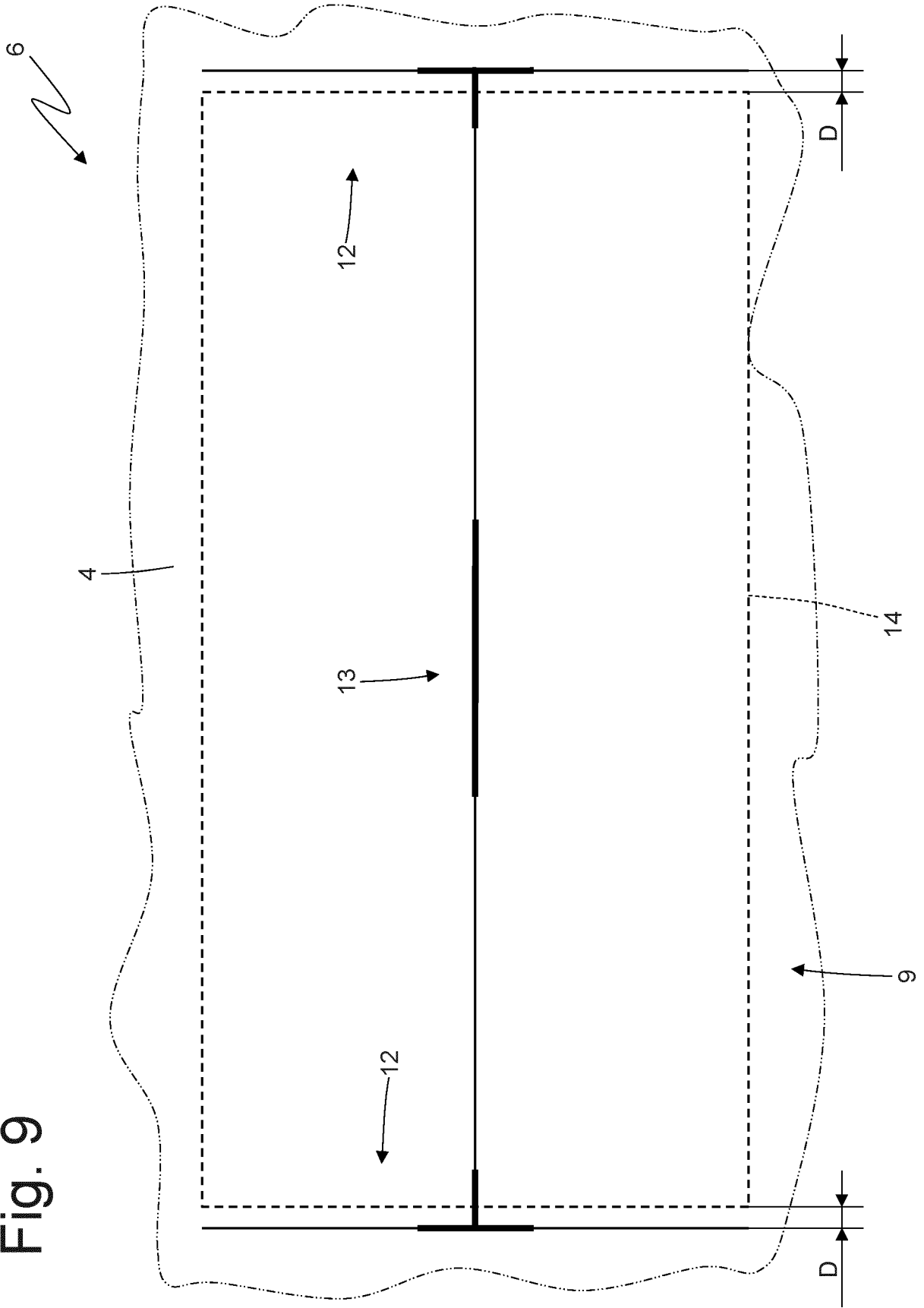


Fig. 9



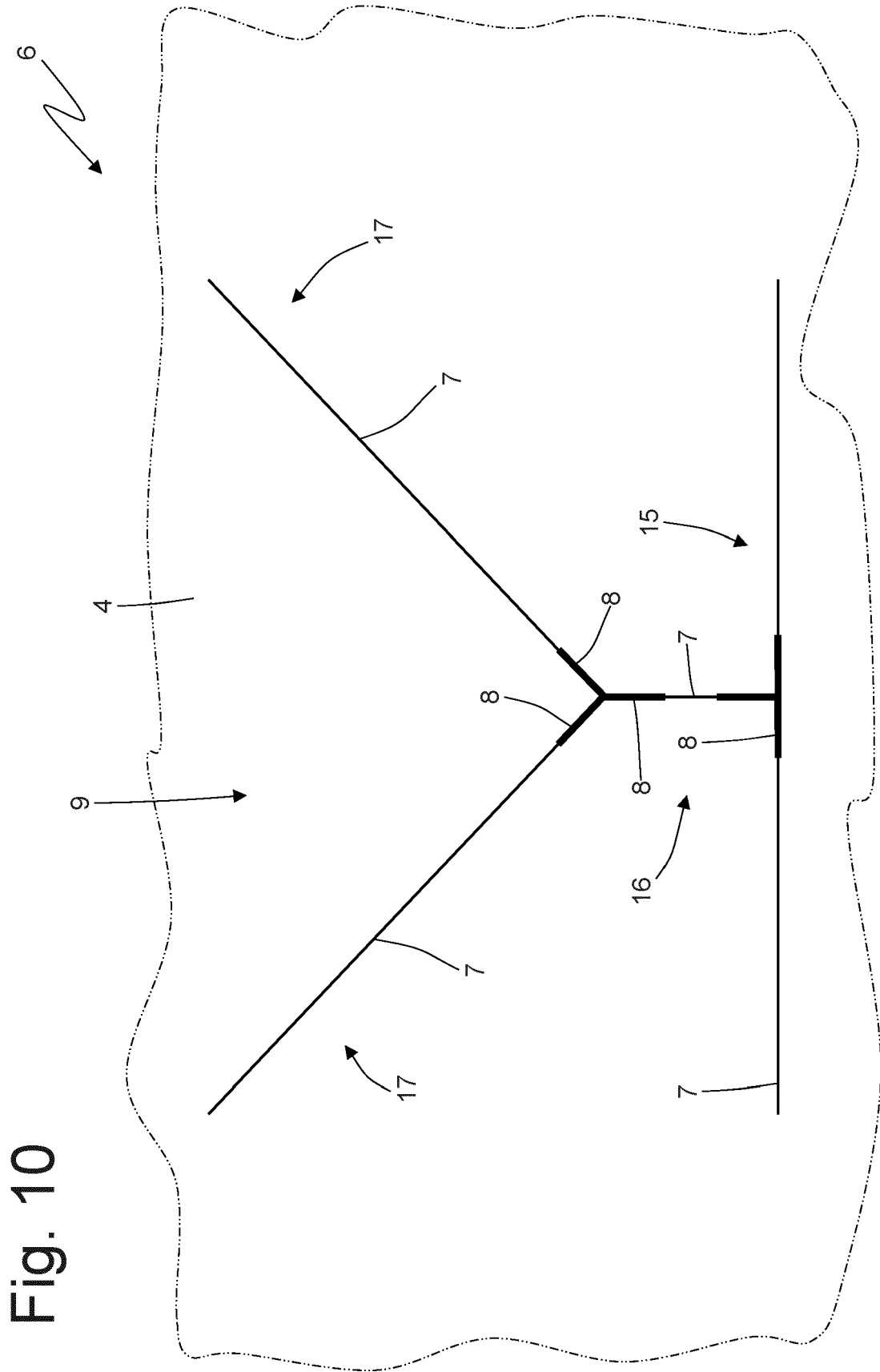


Fig. 10

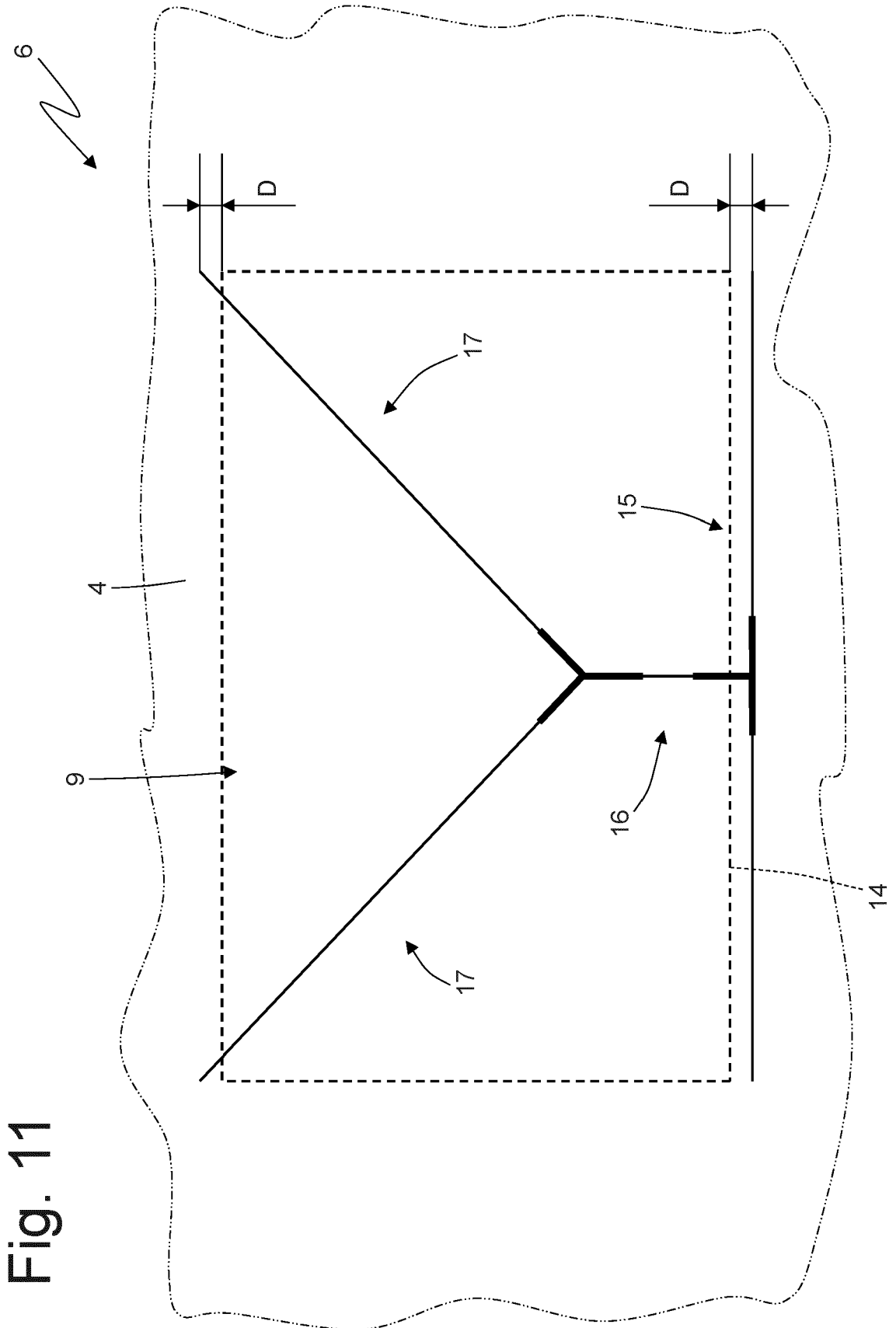


Fig. 11

REFERENCES CITED IN THE DESCRIPTION

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